

Ackerman, Joyce

From: Stovall - CDPHE, Curtis <curtis.stovall@state.co.us>
Sent: Thursday, December 21, 2017 6:36 AM
To: Dave Folkes, PE
Cc: Thomas Krasovec; Richard Dean; Ackerman, Joyce; Walker - CDPHE, David; MacGregor - CDPHE, Kelly; jason.king@coag.gov; Jonathan H. Steeler (JSteeler@sennlaw.com); martin.ogradey@state.co.us; Mark Adams
Subject: Fwd: DRLS - EM Survey Report - As Promised
Attachments: NGPRS Summary Binder - 20171218.pdf; 1990-11-27 Photos from Columbine Landfill PA.pdf

Hi Dave,

Attached for your information is the NGPRS report from the portion of the Neuhauser Landfill that extends onto Waste Connections (WC) property. Please note that the WC anomaly immediately east of anomaly #6 (labeled "Surface metal") is adjacent to your western-most planned test pit (497486 4430143). We believe that this "Surface metal" anomaly, which seems to extend onto Stratus property, may include the drums that were photographed in the summer of 1990 as part of the Revised Preliminary Assessment (RPA). I've attached the photos from the RPA; see the three photos labeled "Photo 4" on PDF page 2.

Please call or email if you'd like to discuss the WC report.

Thanks,
Curt

----- Forwarded message -----

From: Mark Adams <MarkA@wasteconnections.com>
Date: Wed, Dec 20, 2017 at 3:20 PM
Subject: DRLS - EM Survey Report - As Promised
To: "Stovall - CDPHE, Curtis" <curtis.stovall@state.co.us>
Cc: Kyle Regan <KyleRe@wasteconnections.com>, Randy Tourville <RandyTo@wasteconnections.com>

See attached.

--
Curt Stovall, P.E.
Environmental Protection Specialist
Solid Waste Permitting Unit
Solid Waste and Materials Management Program



COLORADO
Hazardous Materials
& Waste Management Division
Department of Public Health & Environment

P 303.692.2295 | F 303.759.5355
4300 Cherry Creek Drive South, Denver, Colorado 80246-1530
curtis.stovall@state.co.us | www.colorado.gov/cdphe/hm



**STEWART ENVIRONMENTAL
CONSULTING GROUP, LLC**
ENGINEERING FOR LIFE



MEMORANDUM

To: Mark Adams, Waste Connection
Cc: Kyle Regan, Randy Tourville
From: Dave Stewart
Date: December 18, 2017
Subject: EM Survey by National GPR Services
Project No.: 4898-001

Mark, I have attached the EM survey for your review. As noted in the report, I met NGPRS on site on November 29, 2017. Kyle and Randy were also on site. At that time, NGRPS performed the EM survey through the area requested and coordinated with Curt Stovall at CDPHE.

There were six (6) areas that NGPRS found that warrant additional investigation. These are identified on the Figure 2 as the "pink" dots. There were three (3) additional areas on the report that are identified in "green dots". These areas have a response but are likely due to surface debris.

Based on previous experience with CDPHE, I would suggest that you coordinate with Curt Stovall and provide test pits for the pink dot areas. One of the requirements will be that you provide a certified asbestos individual to make sure that when digging the test pits, you don't expose the area to asbestos. I assume you have someone in house to provide that service? If not, we can arrange for this to happen.

I doubt that you have buried 55 gallon barrels that Curt is trying to find but he likely won't let this go. The red dots are also located by coordinates from Google Earth (Table 1) and with red flagging at the site. The Stratus site had these red flags stolen a week ago, so they might not be at the site any longer. However, the coordinates found in Table 1 should be sufficient to locate the areas.

Mark, let me know if you want my help on the test pits, but this is mostly a backhoe with pictures and decimation of the material in the test pit. On the west side of the site, we have not found any additional drums of concern, but this is still something to consider.

I know Curt is going to want to explore this and to work with Waste Connections on what to do next. Let me know if you want me to do anything else at this point.



National Ground Penetrating Radar Service, Inc.
Corporate Headquarters
8400 Normandale Lake Blvd, Suite 920
Minneapolis, Minnesota 55437
Tel: (952) 445-9040
Fax: (952) 445-9046
TF: (877) 556-4777
www.nationalgpr.com

GEOPHYSICAL EXPLORATION REPORT

REPORTED TO:

Stewart Environmental Consulting Group
748 Whalers Way, Suite 210
Fort Collins, Colorado 80525

PROJECT LOCATION:

County Roads 5 and 6
Erie, Colorado

NGPRS PROJECT NO: 178694

ATTN: David Stewart /

dave.stewart@stewartenv.com

CLIENT PROJECT NO: Waste

Connections Property

DATE: December 11, 2017

INTRODUCTION

Stewart Environmental Consulting Group, LLC. (Stewart Environmental) retained National Ground Penetrating Radar Service, Inc. (NGPRS) to perform a geophysical exploration investigation to locate subsurface metal objects representing potential drums, and other buried debris in one (1) exterior, parcel area designated: Area A. Area A comprised approximately two (2) acres, and located southwest of the intersections of County Roads 5 and 6 in Erie, Colorado. The project location is shown on the Project Location Vicinity Map, Figure 1.

EQUIPMENT

A Geonics EM61 MK2 (EM61) was used to explore the property for subsurface metal objects. The EM-61 is a time-domain, high sensitivity metal detector suitable for the detection of both ferrous and non-ferrous metal. The EM61 provides multiple measurements of the decay of the secondary magnetic field associated with any metallic object using up to four (4) time gates (readings spaced from 216 microseconds to 1,266 microseconds). The EM61 was equipped with an Archer data logger and global positioning system (GPS) antenna to record EM61 data and horizontal positioning data simultaneously. Equipment and settings are shown in Attachment 1.

OBSERVATIONS AND PROCEEDURES

NGPRS personnel performed the site exploration on November 29, 2017. All field work was coordinated onsite with Mr. David Stewart of Steward Environmental. The geophysical investigation area is outlined in white on Figure 2.

EM data was collected by traversing Area A using a ten (10) to fifteen (15) foot line intervals over the survey area. Due to site features (vegetation and small trees) and topography, line spacing was adjusted, if needed, to work around these site features.

EM data with GPS coordinates were processed Track Maker61 software and converted for gridding and contouring using Golden Software Surfer 14. Contour maps of the EM61 Channel 1 (metal) responses were prepared for the survey area and evaluated for high in-phase responses (anomalies) representing potential metal targets (drums, metal debris, and municipal waste). Channel 1 was selected for contouring because it provides the deepest exploration depth in the standard operation mode.

FINDINGS

NGPRS personnel explored the area shown in Figure 2. Following the daily instrument calibration check EM61 data collection was completed with qualitative review of the EM response to confirm surface metal debris versus buried metal targets. EM61 data collected from the survey area and was compared against targets of interest (metal debris vs drum) and the magnitude of the instrument response was evaluated to select EM anomalies that have the potential to represent a buried drum.

The EM61 contour map and anomaly location map for Area A is provided as Figure 2. The findings of the EM61 survey are summarized below:

- A good correlation of the processed EM61 data and the field observations of site conditions and buried targets in the survey areas was achieved.
- Area A results indicate six (6) EM anomalies, shown in pink on Figure 2, were identified with a EM response magnitude that could represent a potential drum(s) or other metal target(s) having a similar mass as a drum. Table 1 provides a list of the EM anomaly location coordinates.
- Area A results also identified three (3) surface metal areas, shown in green on Figure 2, from former dumping or site features (e.g., fencing). These surface metal areas contributed to high magnitude EM responses, as shown on Figure 2. Several smaller magnitude EM responses across the survey area are likely due to smaller buried metal targets and debris.
- EM anomaly identification will require excavation to confirm the presence of drums at the six (6) EM Anomaly locations identified in this report.

LIMITATIONS

Our authorized work scope was limited to our observations in the requested areas only. As such, our conclusions and recommendations pertain only to those areas observed. Should conditions differing from those documented by NGPRS at the time our work be found in the future, NGPRS reserves the right to review our conclusions and recommendations, and modify them accordingly.

STANDARD OF CARE

The work performed by National GPR Service, Inc. has been conducted in a manner consistent with that level of skill and care ordinarily exercised by other members of the profession currently practicing in this area.

- We recommend that the EM target locations identified be confirmed using test pit excavation or soft-dig (vacuum excavation) methods.

DECLARATION

The conclusions in the report are predicated on observation and testing of the earthwork and/or construction of the foundation under the direction of the Certified Individual of record. Opinions are based on data assumed representative of the site. We do not warranty conditions below the depth of equipment readings. Recommendations represented in this report should be verified and approved by a designated engineer of record.

QUALIFICATIONS OF THE PROFESSIONAL(S)

The geophysical exploration investigation was conducted by Ray Wagner who is a Professional Geologist and assisted in the preparation of this report, and Stan Liszka reviewed the contents of this report. Staff certification qualifications are shown in attached Attachment 2.

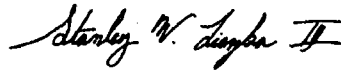
REMARKS

We appreciate the opportunity to assist you on this project. If you have any questions regarding this report or our services, feel free to contact us.

National Ground Penetrating Radar Service, Inc.



Raymond Wagner, PG
Senior Geologist
Phone: (315) 415-2123
ray.wagner@nationalgpr.com



Stan Liszka
Certified Professional Geologist

TABLE 1
EM ANOMALY LOCATION COORDINATES

EM Anomaly Number	Latitude	Longitude
1	40° 1'18.98"N	105° 1'46.82"W
2	40° 1'18.21"N	105° 1'46.81"W
3	40° 1'17.75"N	105° 1'46.56"W
4	40° 1'18.14"N	105° 1'46.97"W
5	40° 1'17.80"N	105° 1'47.32"W
6	40° 1'16.88"N	105° 1'47.01"W

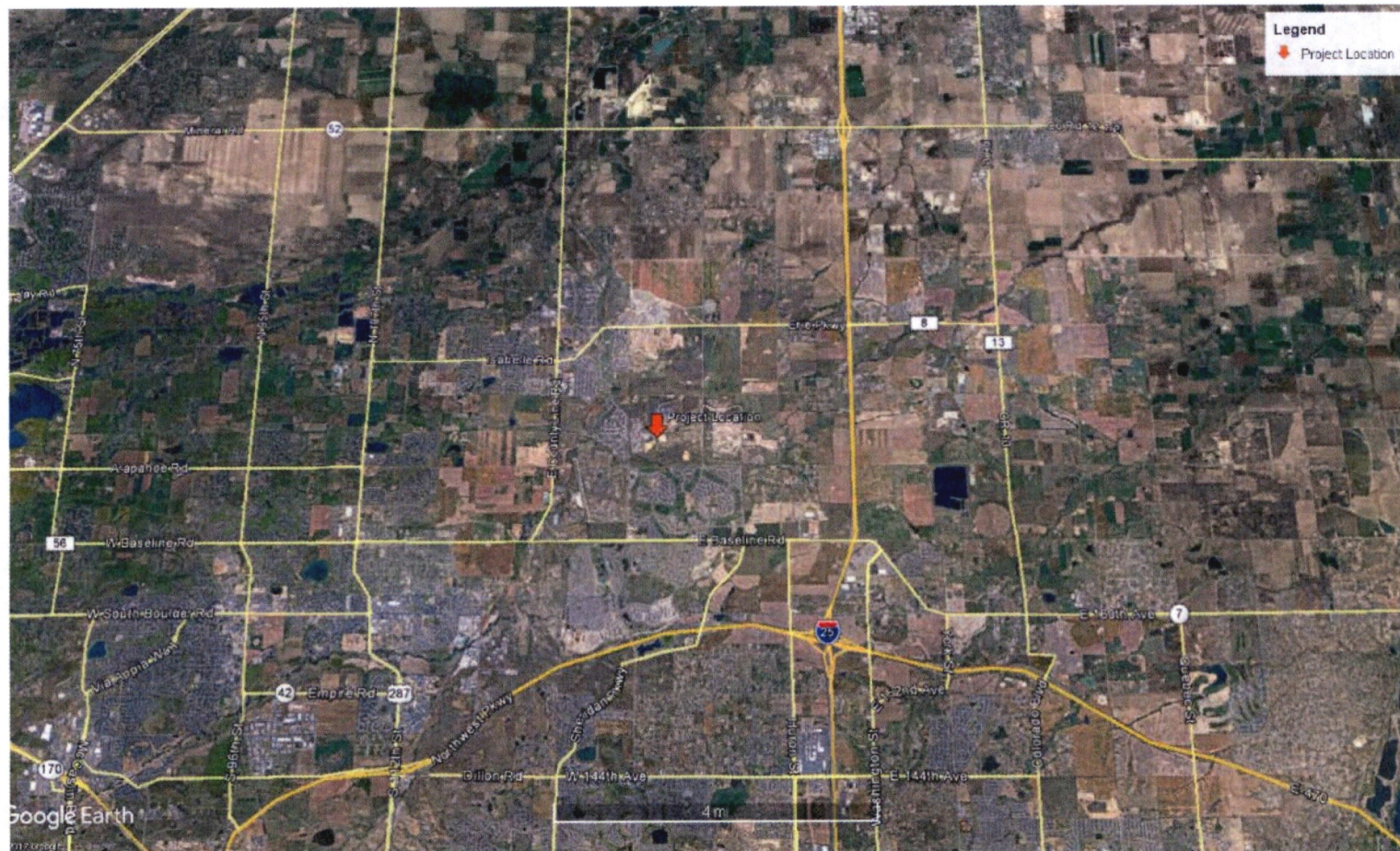


Figure 1 - Project Location Vicinity Map
 Client: Stewart Environmental Consulting Group
 Project No. 178694
 December 11, 2017



Figure 2 - EM Contour and Anomaly Location Map

Client: Stewart Environmental Consulting Group

Project No. 178694

December 11, 2017



Geonics EM61-MK2

The Geonics EM61-MK2 Metal Detector provides multiple measurements of the decay of the secondary magnetic field associated with any metallic object. Data available from as many as four time gates – geometrically spaced in time from 216 μs to 1,266 μs – provide recognizable improvements in both detection and characterization.

Data from multiple time gates -- three or four, user-selectable -- are recorded to provide a description of the response decay rate, supporting both the characterization and limited discrimination of targets. Data collection is supported by the DAS70-AR Data Acquisition System.



Archer 2™ Rugged Handheld



The Archer is used for data logging processes in the field.

The system can be pushed or pulled as a trailer, by person or vehicle, as either a single unit or an array of multiple units; for multiple unit configurations, options are available to customize component specifications and layout. As may be required, with the addition of a backpack and associated cable set, the system can be carried by a single person with a belt harness.

MINNESOTA STATE BOARD OF ARCHITECTURE, ENGINEERING,
LAND SURVEYING, LANDSCAPE ARCHITECTURE, GEOSCIENCE
AND INTERIOR DESIGN
THIS IS TO CERTIFY THAT

Raymond A. Wagner

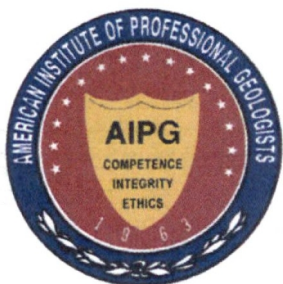
is a licensed

Professional Geologist

License Number
30532

Effective Date
06/01/2016

Expiration Date
06/30/2018



AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS

NATIONAL HEADQUARTERS

12000 Washington Street, Suite 285, Thornton, CO 80241

(303) 412-6205 · FAX (303) 253-9220 · e-mail: aipg@aipg.org · www.aipg.org

2017 NATIONAL EXECUTIVE COMMITTEE

PRESIDENT

Adam W. Heft, CPG-10265
WSP | Parsons Brinckerhoff, Inc.
O: (517) 886-7400, Michigan
heft@pbworld.com

PRESIDENT-ELECT

R. Douglas Bartlett, CPG-08433
Clear Creek Associates
O: (480) 659-7131, Arizona
dbartlett@clearcreekassociates.com

PAST PRESIDENT

Helen V. Hickman, CPG-07535
Aquatech GeoSciences, Inc.
O: (561) 307-2369, Florida
hickmanhydro@att.net

VICE PRESIDENT

John M. Stewart, CPG-11115
ECS Carolinas, LLP
O: (336) 856-7150, Carolinas
jstewart1@ECSLimited.com

SECRETARY

Keri A. Nutter, CPG-11579
DOWL
O: (907) 562-2000, Alaska
knutter@dowl.com

TREASURER

James R. Burnell, CPG-11609
Mineral Strategies, LLC
O: (303) 278-4521, Colorado
dialjeemincolo@aol.com

EDITOR

John L. Berry, CPG-04032
John Berry Associates
O: (512) 452-8068, Texas
jlbassoc@gmail.com

ADVISORY BOARD REPRESENTATIVES

Jeffrey J. Frederick, CPG-10989
Louis Berger
O: (914) 798-3762, New York
jfrederick@louisberger.com

Mehmet Pehlivan, MEM-1546
Bays Environmental
Remediation Management
O: (888) 511-5335, California
mehmet@baysgrp.com

John (Rusty) Sewell, MEM-2487
Marion Environmental, Inc.
O: (423) 499-4919, Tennessee
rsewell@marionenv.com

Nancy J. Wolverson, CPG-11048
O: (775) 770-4615, Nevada
nancyjeanw@aol.com

EXECUTIVE DIRECTOR

Aaron W. Johnson, PhD
AIPG National Headquarters
O: (303) 412-6205, Colorado
awj@aipg.org

TO WHOM IT MAY CONCERN:

This is to attest that **Stanley W. Liszka, III** is currently a Member in good standing and Certified by the American Institute of Professional Geologists.

Date of AIPG Certification

April 6, 2016

AIPG Certified Professional Geologist number

CPG-11833

Certification good through

December 31, 2018

For the American Institute of Professional Geologists,

Aaron W. Johnson
Executive Director

Date: October 24, 2017





PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4

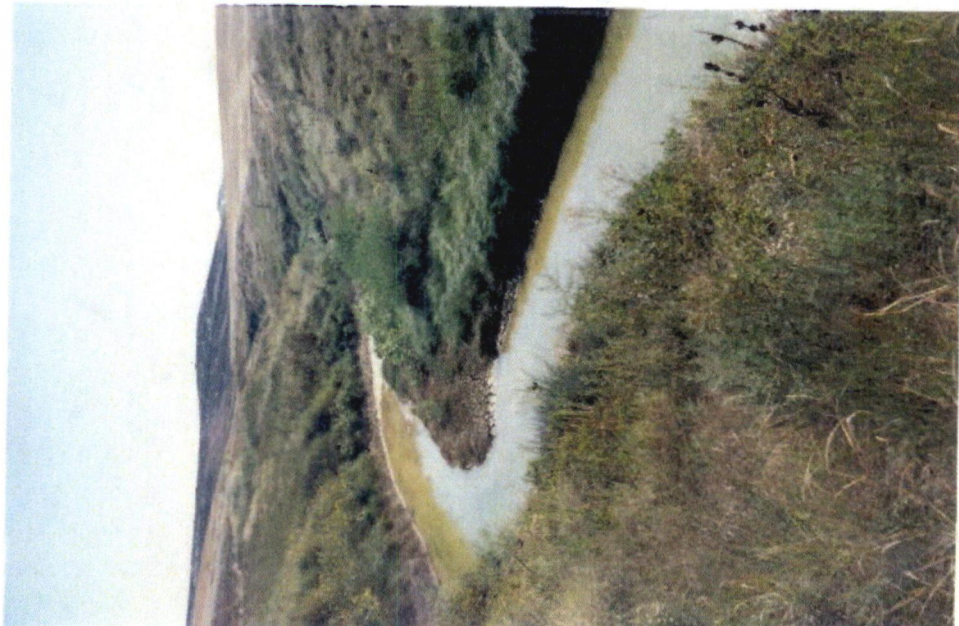


PHOTO 5